

PROJECTORS

INTRODUCTION

Whether you're trying to impress a potential client with your new business plan or watching the latest blockbuster in beautiful widescreen, nothing beats a projector. Today's portable projectors are smaller and smarter than ever, but can produce stunning image quality with breathtaking colours and fluid motion.

Best of all, they're affordable. You can now pick up a tiny but powerful projector suitable for business meetings for less than £750, and a home cinema projector capable of superb image quality for less than the price of a good home cinema sound system.

This month we've tested 12 of the latest projectors, including eight versatile products that are ideal for the office and four specialised high-quality home cinema projectors. Whatever you want to bring to the big screen, we'll help you make a big impact on your audience rather than your bank account.

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A projector is a great business tool and it provides excellent viewing quality at home. We put 12 projectors through their paces to find the ultimate model for you

THE LIGHT BRIGADE

Choosing a... Projector

Most people buy a projector to watch films at home or show presentations at work, so manufacturers make two distinct ranges. However, even if you know which type of projector you need, the technology and connections available can be bewildering. In this guide we explain the types of projector technology and what to look for.

DIFF'RENT STROKES

Projectors designed for office use are very different from home cinema models. If you're choosing an office projector, look for a high level of brightness. This is measured in ANSI lumens. The projected image needs to be bright to show up properly in a meeting room, where there will usually be bright fluorescent lighting. While 1,500 ANSI lumens produces a reasonable picture in a moderately lit room, it's the very minimum you should go for, and 2,000 ANSI lumens or higher is preferable.

All the office projectors in this group have a native resolution of 1,024x768 pixels. Each can accept a higher resolution input, but will shrink the picture to fit. The table on page 123 shows the highest resolution each projector can scale down.

If you're buying a projector for home cinema use, you'll almost certainly want to use it in a darkened room. This means brightness is less important, and most of the home cinema projectors in the group have a

brightness level of 1,100 ANSI lumens. Instead, image quality should be your main concern. Our reviews explain which projectors produce the best cinematic experience.

High-definition TV (HD TV) is nearly here, so there's no point in getting a projector for the home that doesn't support it. All four of the home cinema projectors here support the 720p HD TV standard, which uses a resolution of 1,280x720. With a native resolution of 1,280x720 pixels, all four are ideal for displaying widescreen films and television.

THEY DO IT WITH MIRRORS

Today's projectors use one of two types of technology: LCD or DLP. DLP projectors use a chip covered in tiny mirrors. Each mirror forms one pixel on the screen, so the DLP projectors in this group use a grid of either 1,024x768 mirrors (786,432 in total) or 1,280x720 mirrors (921,600 in total). These mirrors tilt to reflect the light from the bulb out through the lens. By flicking back and forth thousands of times a second, the mirrors make the pixels look white where they reflect light, black where they don't, and grey when they reflect light some of the time. To produce a colour picture, a set of coloured filters mounted on a wheel is placed in the path of the light shone on the DLP chip. This colour wheel rotates, sending red, green and blue light in turn

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to the chip. The DLP chip then reflects red, green and blue images on the screen in turn. The human eye perceives this as a full-colour image.

DLP chips are small, so DLP projectors can be smaller than LCD ones. They also produce higher contrast than traditional LCD systems. The main disadvantage of DLP technology is known as the rainbow effect, where coloured fringing appears on fast-moving images. This can be annoying, but many new DLP projectors use clever techniques to reduce or nearly remove it.

Liquid crystal display (LCD) projectors split white light into three beams: one red, one green and one blue. Each beam then passes through a small LCD panel that's not dissimilar to those found in LCD monitors. Each panel

blocks certain areas of the coloured light, creating a monochrome image. These three monochrome images then recombine to produce a full-colour image. LCD projectors have traditionally produced lower contrast ratios than DLP projectors, but they don't suffer from the rainbow effect. Modern LCD systems, which are often confusingly referred to as 3LCD, use a technology called automatic iris control to increase contrast dramatically. Both the LCD home cinema projectors in this review use this technology.

MAKE THE CONNECTION

Make sure that the projector you buy has all the inputs you need. VGA inputs are included

on every projector except the BenQ PE7700, but many projectors cannot accept a standard DVI digital cable. An HDMI connector enables you to connect HD video sources, so it's useful on a home cinema projector. DVI can be converted to HDMI using a special cable. If you want to connect a high-quality DVD player in progressive scan mode, look for a component video input.

How we test Projectors

We assess each projector's picture quality through its VGA, DVI (where available), S-video and component connections. We use our standard suite of monitor test cards, which include a greyscale transition and colour wheel test. These are ideal for identifying problems with brightness and contrast. Displaying a rapidly bouncing white square on a black background tests the ability of a DLP projector to avoid the rainbow effect.

To assess video quality we use a Pioneer DVD player producing progressive-scan video and, where possible, high-definition video played on a PC. We also run the latest HQV benchmarks, which test each projector's ability to de-interlace, scale video and display fine detail.

Know your connections Projector inputs and outputs

VGA OUTPUT Lets you view the projected picture on a monitor at the same time

COMPOSITE / S-VIDEO INPUTS Allow you to display video from a VCR or DVD player

VGA INPUT Connects to the D-sub analogue video output on your computer

USB Enables you to control the onscreen computer cursor with the projector's remote control



DVI INPUT Picture quality is sharper if you can connect your computer digitally here

PROJECTORS

OFFICE PROJECTORS

ACER PD125

★★★★

£721 inc VAT



At £721 including VAT, Acer's PD125 is the cheapest projector in the group. Its lamp costs just 7p per hour; only the Dell 3400MP is cheaper.

Acer hasn't skimped on features. You get the same 1,024x768 native resolution provided by the more expensive models here, and the contrast ratio of 2,000:1 also compares well. It is fairly portable, and weighs 2.4kg.

At 30dBA, it is one of the quietest projectors in the group, making it ideal for business presentations in small rooms. At its shortest projection distance of 1.2m the PD125 throws an image with a 62cm diagonal, which is good enough for presentation purposes.

Coaxing a decent image out of the PD125 took some effort. Like Dell's 3400MP, it had trouble with yellow areas. Desktop folders had a greenish hue until we adjusted the colour settings. We also had to adjust the tracking, brightness and contrast to get a good picture. Images were sharp, but colours weren't as rich as those from the other DLP office models.

Rainbow effects were noticeable in our black-and-white contrast test, but they weren't too obtrusive. Our video signal processing tests proved particularly difficult for the Acer, though. It did extremely well in noise reduction and sharpness tests, but it performed poorly when we evaluated motion.

If you're on a tight budget and willing to spend a little time getting to know the image control menu, this is a decent, inexpensive business projector. If video quality is important to you, however, or you want to add some extra punch to your client presentations, it's worth spending a little more.

SUMMARY

- ✓ Budget price, low lamp costs
- ✓ Quiet
- ✗ Image needs adjustment

DLP PROJECTOR 1,024x768 native resolution, 2,000 ANSI lumens, 2,000:1 contrast ratio
PART CODE EYJ1601.006
SUPPLIER www.projectors.co.uk
DETAILS www.acer.co.uk

CANON LV-X5

★★★★

£887 inc VAT



Canon's LV-X5 LCD projector has a surprisingly low contrast ratio of just 300:1. Canon's website explains that this projector is aimed at the education market and is "gentle for young eyes". Its 1,500 ANSI lumens brightness is one of the lowest in the group, though, and this could be problematic in a brightly lit classroom.

Our brightness and contrast tests showed that images from the LV-X5 are not as crisp and clear as those from the ViewSonic PJ656. It also had trouble displaying a solid black.

The LV-X5's picture didn't show any banding in our greyscale test, but it seemed to omit a number of the lighter grey shades. Our tests also revealed some interference, which we solved by adjusting the clock setting. The LV-X5 doesn't have a digital connector, but we still ran our HD film clip. This produced richer and more vibrant colours than those from the DLP projectors, and in this respect the Canon LV-X5 outdid both the ViewSonic PJ656 and the InFocus LP 640.

We were disappointed that we couldn't find any way to adjust the height or tilt of the projector. Its 73cm projection distance is the shortest in the group, and at this distance it will produce an image with a diagonal of 53cm. This makes it good for use in particularly small rooms. It didn't do as well in our video signal processing tests, where it produced a lot of jagged aliasing artefacts and noise.

This is an inexpensive projector, and it produces a good picture for presentations. However, it's not much good for video use, and Dell's 3400MP can handle both.

SUMMARY

- ✓ Rich, vibrant colours
- ✗ Low contrast ratio
- ✗ Not good for movies

LCD PROJECTOR 1,024x768 native resolution, 300:1 contrast ratio, 1,500 ANSI lumens
PART CODE 0914B006AA
SUPPLIER www.digitalkind.co.uk
DETAILS www.canon.co.uk

DELL 3400MP

★★★★★★

£996 inc VAT



At 154x204x74mm, Dell's 3400MP is half the size of the other office projectors in this group, and it's also the lightest. Its 1,500 ANSI lumens rating looks weak next to the Mitsubishi XD490U's 3,000, but it's still bright enough for use in a conference room.

The 3400MP is one of two projectors here that use an M1-DA connector rather than the more common DVI socket. An optional DVI to M1-DA cable will be available soon, but without it we were unable to test the 3400MP with a digital input.

When connected by VGA, folders on the PC's desktop looked slightly green. It also struggled with the yellow in our colour wheel test, displaying a solid block of colour in the middle instead of a smooth transition. This used to be a common problem with DLP projectors, but most of the models here had minimal or no problems with the yellow.

We made some colour adjustments that reduced the yellow problem significantly. With this done, colours were even and brightness and contrast excellent. Our greyscale test showed banding in the lighter grey areas, but whites were crisp. This projector was one of the best in the group in our rainbow effect test, and performed well when displaying moving images.

In our video signal processing tests the 3400MP proved particularly good at handling noise reduction, and produced sharp, smooth images. This is a good buy for a business projector. It is reasonably priced, portable, good for presentations and won't disappoint if you take it home to watch movies.

SUMMARY

- ✓ Small and lightweight
- ✓ Low lamp running costs
- ✗ DVI cable not yet available

DLP PROJECTOR 1,024x768 native resolution, 1,500 ANSI lumens, 2,100:1 contrast ratio
PART CODE 305-3400MP
SUPPLIER Dell 08701 524699
DETAILS www.dell.co.uk

INFOCUS LP 640

★★★★

£1,087



InFocus's LP 640 is a good choice for business presentations, as it produces vibrant colours. Like Dell's 3400MP it uses an M1-DA digital connector, so we were unable to test it using a digital input, but it passed all our tests when using an analogue VGA connection. Our only complaint was that when displaying a screen of pure white, very thin yellow and red stripes were just visible down the right-hand side. Colours were richly saturated, and while the HD film clip didn't look as good here as it did on the Canon LV-X5, we were still pleased with the result.

Of the three LCD office projectors in the group, the LP 640 had the most impressive brightness and contrast levels. With 2,200 ANSI lumens, it's a good projector to use in rooms that can't be darkened. InFocus has equipped the LP 640 with a display on the top of the projector. Cleverly, this starts a countdown when you switch the projector off to show when it's safe to unplug it from the mains supply.

Unfortunately, the LP 640 isn't particularly cheap. Its lamp costs 13p per hour to run, which is one of the highest running costs in the group. It costs £200 more to buy than the Canon LV-X5. It has a few more features, but considering image quality alone we're not sure it's worth the extra money.

If you want to watch movies, the LP 640 is not a good choice. Like the other office LCD projectors, it fared poorly in our video signal processing tests. The cheaper DLP projectors are not as good for presentations, but they're better for viewing films on your day off.

SUMMARY

- ✓ Richly saturated colours
- ✗ High lamp-running costs
- ✗ No good for movies or video

LCD PROJECTOR 1,024x768 native resolution, 400:1 contrast ratio, 2,200 ANSI lumens
PART CODE LP640
SUPPLIER www.savastore.com
DETAILS www.infocus.com

MITSUBISHI XD490U

★★★★★

£1,605 inc VAT



Mitsubishi's XD490U is rated at a huge 3,000 ANSI lumens, so it can produce a perfectly visible image in even the most brightly lit meeting rooms. It also has a high contrast ratio of 2,500:1, which is surpassed only by the projectors designed for home cinema use. At 3kg it's not a device you'll want to carry to off-site meetings, but it won't break your back if you're simply moving it around the office.

We were pleased to see a DVI connector at the back of the projector, and we ran our tests using both VGA and DVI. There wasn't much difference between the two, although the digital picture showed better gradation and less banding in our greyscale test. The XD490U produced strong, even colours and nice transitions in the colour wheel tests. It coped well with yellow areas and showed hardly any of the solid colour banding other DLP projectors exhibited.

As with all the DLP projectors here, our black-and-white contrast test showed up some rainbow effects. Unfortunately, this was also just about noticeable when we played our HD film clip. Although this doesn't affect the still image quality, we would expect more from a projector at the higher end of the price range.

The XD490U sailed through our video signal processing tests. It performed particularly well in noise-reduction and sharpness tests.

This is a slick projector that produces good images for presentations and video clips. It isn't ideal for the businessperson on the move, but it could make a nice addition to the boardroom.

SUMMARY

- ✓ Very bright
- ✓ High contrast ratio
- ✗ Expensive

DLP PROJECTOR 1,024x768 native resolution, 2,500:1 contrast ratio, 3,000 ANSI lumens PART CODE XD490U
SUPPLIER www.ivojo.co.uk
DETAILS www.mitsubishi-electric.co.uk/vis

NEC LT180

★★★★★

£844 inc VAT



NEC's LT180 has an unconventional design. The lens is rather short, giving the projector a long, slender shape, and all the connectors are on the side. It is a very stylish projector and would look equally good in the boardroom or the living room. NEC has included a wall colour adjustment feature, which is useful if you don't always have a white screen or wall on which to project.

This is the second-cheapest projector in the group, but it produced some of the best images in our computer tests. It produced the smoothest transitions in our greyscale test, and there were no rainbow effect problems in our video-clip test. Strangely, this projector has a contrast ratio of just 1,000:1, the lowest of all the DLP models here, although this didn't affect the picture quality. Unfortunately, its running costs are very high, with each hour of use costing 17p.

When it came to our video signal processing tests, the LT180 didn't do very well. Its performance was on a par with those of the office LCD projectors. It got full marks for sharpness and its noise reduction was the best in the group, but it performed poorly in our de-interlacing tests.

The LT180 has a component video input, but we spotted some rainbow effects when playing a DVD.

This projector lacks a digital connector for hooking up to a computer, but at this price we're not complaining. The LT180 will produce crisper images for presentations than the Acer PD125, and you get more features for your money. We wouldn't recommend it for home entertainment use, though.

SUMMARY

- ✓ Inexpensive to buy
- ✓ Good for presentations
- ✗ High running costs

DLP PROJECTOR 1,024x768 native resolution, 1,000:1 contrast ratio, 2,000 ANSI lumens PART CODE 50027987
SUPPLIER www.dabs.com
DETAILS www.nec.co.uk

TOSHIBA TW90A

★★★★★

£1,270 inc VAT



The Toshiba TW90A is unique in this group, as it comes equipped with a wireless networking card. Setting up a connection between the projector and a notebook is simple and took just a couple of minutes using the supplied utility.

The remote lacks mouse controls, but there is a serial port for hooking up to a PC. The USB terminal is for service purposes only and owners are not meant to use it. There are two VGA ports, which is handy for running a presentation from a monitor while your audience watches the big screen. A component video adaptor is available, but there's no DVI port.

Brightness and contrast were excellent, but obvious banding appeared across our greyscale test. Our moving images showed some rainbow effects, but these were less pronounced than those of the other DLP projectors in this group. The TW90A had problems displaying yellow areas, but this wasn't as obvious as it was on the Dell 3400MP and Acer PD125.

The TW90A is intended as a business projector, but it coped admirably with our video signal processing tests. It produced the best score here from an office projector. It's fairly expensive to buy, though, and the lamp costs 12p per hour to run.

The TW90A's wireless connection is impressive, and would be particularly handy if you wanted to mount the projector on the ceiling of a meeting room. It's also good for watching the occasional film. It's expensive to buy and run, though, and not as good value as Dell's 3400MP.

SUMMARY

- ✓ Excels at displaying video
- ✓ Wireless connection
- ✗ Expensive to buy and run

DLP PROJECTOR 1,024x768 native resolution, 2,000:1 contrast ratio, 2,200 ANSI lumens PART CODE TDP-TW90A
SUPPLIER www.savastore.com
DETAILS www.toshiba.co.uk/projectors

VIEWSONIC PJ656

★★★★★

£962 inc VAT



ViewSonic's PJ656 can be mounted on the ceiling, which is ideal if you want to keep your projector out of the way. For this purpose it provides three invert settings: two that flip the image to the side and one that completely reverses it. It is also one of the lightest projectors here, weighing just 2.8kg, so it won't make your ceiling sag.

One area where LCD lags behind DLP technology is in brightness and contrast. The PJ656 performed poorly here compared with the other office models. We had to adjust the contrast and brightness settings.

Apart from that, the PJ656 did quite well in our tests. In our greyscale test it produced a little banding in the lighter greys, but otherwise colours were good. It also did well with moving images. The film clip looked really good when viewed in 16:9. The PJ656 has component and S-video ports for connecting to a video or DVD player. At first we couldn't get the projector to switch to S-video, as there appeared to be no control for changing the input source in the onscreen menu. In fact, this option is on the remote control only. The PJ656 did well in the parts of our video signal processing test that related to noise reduction and it scored full marks in the sharpness tests.

The PJ656 is a good all-rounder. Business users will like the low lamp running costs of 7p per hour, and home users will like its video quality. Its brightness and contrast levels are disappointing, though, so we'd recommend Dell's similarly priced 3400MP instead.

SUMMARY

- ✓ Produces good movie images
- ✓ Low running costs
- ✗ Poor brightness and contrast

LCD PROJECTOR 1,024x768 native resolution, 2,100 ANSI lumens, 400:1 contrast ratio PART CODE PJ656
SUPPLIER <http://uk.insight.com>
DETAILS www.viewsonic-europe.com/uk

PROJECTORS

HOME CINEMA PROJECTORS

BENQ
PE7700

★★★★★

£1,495 inc VAT



At 7.6kg, BenQ's PE7700 is the heaviest projector in the group and almost seven times the weight of the Dell 3400MP. At its heart is the latest DLP chip, which the Toshiba MT700 also uses, and like that projector the PE7700 produced rich colours and deep blacks. It worked well with colour transitions. It also has a six-segment colour wheel, which is supposed to reduce significantly the rainbow effects that earlier DLP colour wheels produced. This certainly seemed to make a difference, removing almost all traces of the rainbow effect from our tests.

The connectors, which include HDMI but not VGA, hide behind a panel that slides off at the rear of the projector. The PE7700 has a short projection distance, producing a 203cm image at 2m and 254cm at 3m. The 1,100 ANSI lumens rating isn't bright, but it's about on a par with other home cinema projectors. The remote control is longer than most, but it provides buttons for nearly all the most commonly used menu options, such as specific ratios and input sources. It's a huge time saver.

The PE7700 can scale non-HD content down or up to the native resolution. De-interlacing and scaling on the PE7700 is the best in the group, just outperforming the similarly specified Toshiba MT700. Our only complaint was that it didn't manage to get rid of all the noise from projected images in our tests.

Overall, the PE7700 is a great home cinema projector but it's not very good value. It produces an excellent picture, albeit with a little too much noise for our liking, but it costs almost £500 more than Panasonic's excellent PT-AE900E.

SUMMARY

- ✓ Reduced rainbow effect
- ✓ Projects large pictures
- ✗ Too much image noise

DLP PROJECTOR 1,280x720 native resolution, 2,500:1 contrast ratio, 1,100 ANSI lumens
PART CODE 99JOC77.B51
SUPPLIER www.dabs.com
DETAILS www.benq.co.uk

EPSON
EMP-TW600

★★★★★

£1,299 inc VAT



Epson's EMP-TW600 is easily the best-looking projector in the group, and will enhance the décor of any living room. As with Panasonic's PT-AE900E, the EMP-TW600 has a dynamic iris. This constantly adjusts the light the projector emits, resulting in an impressive 5,000:1 contrast ratio.

When we played HD video files the image quality blew us away. Colours were particularly vibrant, and details sharp. This experience was enhanced by the large picture, which it achieved at a very short distance. The TW600 produces an impressive 177cm picture from just 2m.

There's no SCART socket, but an adaptor is supplied that converts the projector's D4 input into SCART. There is a VGA input, and although the TW600 is clearly a home cinema projector we decided to see how it would cope in our analogue tests. Colour transitions were excellent, and we were impressed at how dark black areas were. It also did well in our greyscale test, although some of the lightest greys appeared to be missing.

Trying to work out which display mode to use is confusing. Where other projectors allow you simply to pick a ratio, Epson offers the choice of Normal, Squeeze, Zoom and Wide. We had to check the manual.

The TW600 didn't perform as well as the other home projectors in our video signal processing tests. It produced sharp details but didn't handle noise reduction as well as the Panasonic PT-AE900E.

The EMP-TW600 previously won a Best Buy award. It's still a great projector, but it's not quite as good as Panasonic's PT-AE900E and it costs more.

SUMMARY

- ✓ Great image quality
- ✓ Excellent contrast ratio
- ✗ Difficult to use

LCD PROJECTOR 1,280x720 native resolution, 5,000:1 contrast ratio, 1,600 ANSI lumens
PART CODE V11H197040DA
SUPPLIER www.247av.com
DETAILS www.epson.co.uk

PANASONIC
PT-AE900E

★★★★★

£1,046 inc VAT



The PT-AE900E may look as if it belongs in an office, but it's an accomplished home cinema projector. When it first appeared in *Shopper* (What's New, April 2006), it won a Best Buy award, so we wanted to see how it compares with the latest projectors.

This is one of two home projectors in the group to use 3-LCD technology. This produces stunning moving images. The PT-AE900E has a VGA input for connecting to a PC, and we ran the projector through our analogue tests. It outperformed all the projectors in the group except the Epson EMP-TW600. As it has only a 1,100 ANSI lumens brightness rating, the PT-AE900E isn't suited to office lighting conditions. It needs a reasonably dark room, such as a living room with the curtains drawn.

The PT-AE900E has a dynamic iris that constantly adjusts the light the projector emits. Inputs at the rear include SCART and HDMI. If you want to connect a DVI PC output, you'll need an adaptor. With its native resolution of 1,280x720 the PT-AE900E supports 720p high-definition video. It produced impressive results when showing our HD film clip, but it couldn't quite match Epson's EMP-TW600.

When we resized the resolution on our PC we had to use the projector's Auto Setup function. The other projectors did this automatically.

The PT-AE900E flew through our video signal processing tests and was particularly good in our de-interlacing test. It may not be all that good looking, but it has everything a budding home cinema user could want, including an affordable price.

SUMMARY

- ✓ Inexpensive
- ✓ Excellent picture quality
- ✓ Superior video processing

LCD PROJECTOR 1,280x720 native resolution, 1,100 ANSI lumens, 5,500:1 contrast ratio
PART CODE PTA900E
SUPPLIER www.pixmania.co.uk
DETAILS www.panasonic.co.uk

TOSHIBA
TDP-MT700

★★★★

£1,700 inc VAT



Like BenQ's PE7700, the Toshiba TDP-MT700 uses the latest DLP chip, and produces excellent contrast with more detail in darker areas. Its brightness rating of 1,000 ANSI lumens is the lowest in the group, though, so it needs quite a dark room to project a decent picture.

The TDP-MT700's industrial design won't appeal to everyone – it looks big and boxy. There's an HDMI port on the rear for connecting to a computer or High Definition source, along with two component inputs and the usual S-video and composite connections. There is no SCART socket. The TDP-MT700 has a six-segment colour wheel, which helped its performance in our tests. The colour transitions in our colour wheel test were nearly perfect, and rainbow effects were barely noticeable.

It performed well in our video signal processing tests; only the BenQ PE7700 produced better scores. Even with the sharpness set to zero it produced highly detailed images. Adjusting this setting sharpened the smaller details and resulted in clear, crisp text. The TDP-MT700 trailed slightly behind the BenQ in two other areas: it isn't quite as bright, and it doesn't create quite as large an image at 2m, producing a 177cm picture compared with the BenQ's 203cm.

The TDP-MT700 produces a great picture, but it's slightly inferior to the cheaper BenQ PE7700. All three other home cinema projectors are better and cheaper. We recommend that you save yourself the best part of £700 and buy Panasonic's PT-AE900E instead.

SUMMARY

- ✓ Reduced rainbow effect
- ✗ Dimmer than rivals
- ✗ Expensive

DLP PROJECTOR 1,280x720 native resolution, 2,500:1 contrast ratio, 1,000 ANSI lumens
PART CODE TDP-MT700
SUPPLIER www.pixmania.co.uk
DETAILS www.toshiba.co.uk/projectors

OFFICE PROJECTORS



MANUFACTURER	ACER	CANON	DELL	INFOCUS	MITSUBISHI	NEC	TOSHIBA	VIEWSONIC
Model	PD125	LV-X5	3400MP	LP 640	XD490U	LT180	TW90A	PJ656
Rating	★★★★	★★★★	★★★★★	★★★★	★★★★★	★★★★★	★★★★★	★★★★★
SPECIFICATIONS								
Technology	0.55" DLP	0.7" LCD	0.7" DLP	0.79" LCD	0.7" DLP	0.7" DLP	0.7" DLP	0.6" LCD
Lamp	200W	130W	156W	170W	250W	210W	200W	180W
Lamp life in hours (economy)	3,000	4,000	4,000	2,000	5,000	2,000	3,000	4,000
Brightness (ANSI lumens)	2,000	1,500	1,500	2,200	3,000	2,000	2,200	2,100
Contrast ratio	2,000:1	300:1	2,100:1	400:1	2,500:1	1,000:1	2,000:1	400:1
PICTURE								
Native resolution	1,024x768	1,024x768	1,024x768	1,024x768	1,024x768	1,024x768	1,024x768	1,024x768
Native aspect ratio	4:3	4:3	4:3	4:3	4:3	4:3	4:3	4:3
Other aspect ratios	16:9	16:9	1:1, 16:9	16:9	16:9	16:9	16:9	16:9
Max diagonal at 213cm/7ft	60"	60"	84" at 11.2'	65"	60"	120"	40" at 1.95m	70"
Throw ratio	1.60:1 fixed	1.46-1.77:1	1.15:1 fixed	1.6-1.9:1	1.63-1.97:1	1.35-1.61:1	2.0-2.4:1	1.5-1.8:1
Projection distance	1.2-10m	0.73-10.88m	1.5-10m	1.5-10.0m	1.3-10m	0.80-6.7m	1.20-10.0 m	0.9-11.2 m
Mirror/invert	Yes/yes	Yes/yes	No/no	Yes/yes	Yes/yes	No/yes	Yes/yes	Yes/yes
INPUTS								
VGA/DVI	Yes/yes	Yes/no	Yes/M1-DA	Yes/M1-DA	Yes/yes	Yes/no	Yes/no	Yes/no
Max compressed resolution	1,280x1,024	1,600x1,200	1,600x1,200	1,280x1,024	1,280x1,024	1,600x1,200	1,600x1,200	1,600x1,200
Audio inputs	No	3.5mm, phono	3.5mm	3.5mm, phono	3.5mm, phono	3.5mm, phono	3.5mm, phono	3.5mm
Composite/S-video/HDMI	Yes/yes/no	Yes/yes/no	Yes/yes/no	Yes/yes/no	Yes/yes/no	Yes/yes/no	Yes/yes/no	Yes/yes/no
Component video	Via VGA	No	Yes	No	Via DVI	Yes	Yes	Yes
PAL/SECAM/NTSC	Yes/yes/yes	Yes/yes/yes	Yes/yes/yes	Yes/yes/yes	Yes/yes/yes	Yes/yes/yes	Yes/yes/yes	Yes/yes/yes
HD TV compatible	Yes	No	Yes	Yes	No	Yes	No	No
Special view modes	PC, video, theatre, user	Standard, presentation, cinema, video, sRGB	PC mode, movie, game, sRGB, user	Film, presentation, photography, 3x user	Presentation, standard, theatre, sRGB, user	Presentation, video, movie, graphic, sRGB	None	Normal, cinema, dynamic
Serial RS232/USB	Yes/yes	Yes/yes	No/no	Yes/yes	Yes/yes	Yes/no	Yes/yes	No/yes
OUTPUTS								
Audio output	3.5mm	3.5mm	3.5mm	3.5mm	3.5mm	3.5mm	3.5mm	3.5mm
Video output	D-sub	D-sub	No	D-sub	15-pin mini D-sub	15-pin mini D-sub	D-sub	15-pin mini D-sub
Internal speaker (power)	None	1W	1W	2W	2W	1W	1W	1W
OTHER								
Noise in normal use	30dBA	35dB	38dBA	34dB	35dBA	36dB	35dB	38dB
Dimensions (HxWxD)	107x277x237mm	93x294x260mm	73.7x240x54mm	103x294x260mm	100x310x245mm	187x113x337mm	101.4x298x275.4mm	97x306x249mm
Weight	2.4kg	3.0kg	1.1kg	3.4kg	3.0kg	2.9kg	2.9kg	2.8kg
Accessories	Remote, cables (power, VGA, composite, USB, S-video, audio), HD TV adaptor, carry case	Remote, cables (power, VGA), carry case	Remote, cables (power, M1 to D-sub/USB, S-video, composite video, phono, 1.8m mini pin to mini pin)	Remote, cables (power, VGA, audio, A/V), carry case	Remote, cables (power, AV cable, RGB, USB, RS232), carry case	Remote, cables (VGA, power), carry case	Remote, cables (power, VGA), WiFi PC Card, carry case	Remote, cables (power, VGA, phono), carry case
LAMP								
Cost inc VAT	£185	£325	£239	£257	£411	£345	£350	£298
Supplier	http://digitalkind.co.uk	08705 143723	www.dell.co.uk	http://ukinsight.com	01707 278684	www.eoprojectorlamps.co.uk	www.toshiba.co.uk/projectors	www.eoprojectorlamps.co.uk
Lamp cost per hour of use	£0.07	£0.08	£0.06	£0.13	£0.08	£0.17	£0.12	£0.07
BUYING INFORMATION								
Price inc VAT	£721	£887	£996	£1,087	£1,605	£844	£1,270	£962
Price ex VAT	£614	£755	£848	£925	£1,366	£718	£1,081	£819
Supplier	www.projectors.co.uk	www.digitalkind.co.uk	www.dell.co.uk	www.savastore.com	www.ivojo.co.uk	www.dabs.com	www.savastore.com	http://ukinsight.com
Info	www.acer.co.uk	www.canon.co.uk	www.dell.co.uk	www.infocus.com	www.mitsubishielectric.co.uk/vls	www.nec.co.uk	www.toshiba.co.uk/projectors	www.viewsoniceurope.com/uk
Manufacturer's part code	EYJ1601.006	0914B006AA	305 - 3400MP	LP640	XD490U	50027987	TDP-TW90A	PJ656
Warranty	Two years collect and return (lamp 90 days)	Three years RTB (lamp 90 days)	Two years next business day (lamp 90 days)	Two years RTB (lamp 90 days)	Three-year loan replacement	Three years collect and return (lamp 180 days)	Three year RTB (lamp 90 days)	Three years onsite (lamp 90 days)

HOME CINEMA PROJECTORS



MANUFACTURER	BENQ	EPSON	PANASONIC	TOSHIBA
Model	PE7700	EMP-TW600	PT-AE900E	TDP-MT700
Rating	★★★★★	★★★★★	★★★★★	★★★★
SPECIFICATIONS				
Technology	0.8" DLP	0.7" 3-LCD	0.7" 3-LCD	0.8" DLP
Lamp	250W	170W	130W	250W
Lamp life in hours (economy)	3,000	3,000	3,000	3,000
Brightness (ANSI lumens)	1,100	1,600	1,100	1,000
Contrast ratio	2,500:1	5,000:1	5,500:1	2,500:1
PICTURE				
Native resolution	1,280x720	1,280x720	1,280x720	1,280x720
Native aspect ratio	16:9	16:9	16:9	16:9
Other aspect ratios	4:3	4:3	4:3, 14:9	None
Max diagonal at 213cm/7ft	80"	70"	80"	70"
Throw ratio	1.18-1.6:1	1.4-2.0:1	1.2-2.4:1	1.3-1.8:1
Projection distance	0.94-7.62m	0.88-9.16m	1.2-12.4m	1.08-11.91m
Mirror/invert	Yes/yes	No/no	No/yes	Yes/yes
INPUTS				
VGA/DVI	No/no	Yes/no	Yes/no	Yes/no
Max compressed resolution	N/A	1,920x1,080	1,920x1,080	N/A
Audio inputs	No	No	No	No
Composite/S-video/HDMI	Yes/yes/yes	Yes/yes/yes	Yes/yes/yes	Yes/yes/yes
Component video	Yes, RGB/HDMI (BNC)	Yes	Yes	Yes, RGB/HDMI (BNC)
PAL/SECAM/NTSC	Yes/yes/yes	Yes/yes/yes	Yes/yes/yes	Yes/yes/yes
HD TV compatible	Yes	Yes	Yes	Yes
Special view modes	Cinema, home theatre, family room, photo, gaming	Dynamic, living room, natural, theatre, 2x theatre black, sRGB	Natural, dynamic, normal, video, 3x cinema	Dynamic, standard, 2x theatre, 3x user
Serial RS232/USB	Yes/no	Yes/no	Yes/no	Yes/no
OUTPUTS				
Audio output	No	No	No	No
Video output	No	No	No	No
Internal speaker (power)	None	None	None	None
OTHER				
Noise in normal use	29dB	30dB	25dB	28dB
Dimensions (HxWxD)	115x300x380mm	124x406x309mm	95x335x270mm	115x300x380mm
Weight	7.6kg	5.2kg	3.6kg	4.5kg
Accessories	Remote, cables (power, VGA, Video, S-Video)	Remote, cables (power, D4 SCART adaptor)	Remote, power cable	Remote, cables (power), carry case
LAMP				
Cost inc VAT	£264	£319	£313	£350
Supplier	www.shophagenta.com	www.eoprojectorlamps.co.uk	www.justlamps.net	www.toshiba.co.uk/projectors
Lamp cost per hour of use	£0.90	£0.11	£0.10	£0.12
BUYING INFORMATION				
Price inc VAT	£1,495	£1,299	£1,046	£1,700
Price ex VAT	£1,272	£1,106	£890	£1,447
Supplier	www.dabs.com	www.247av.com	www.pixmania.co.uk	www.pixmania.co.uk
Info	www.benq.co.uk	www.epson.co.uk	www.panasonic.co.uk	www.toshiba.co.uk/projectors
Manufacturer's part code	99J0C77.B51	V11H1970.40DA	PTAE900E	TDP-MT700
Warranty	Three years, first year replacement, two years RTB (lamp 90 days)	Three years	One year RTB (lamp 90 days)	Two years RTB (lamp 90 days)

Labs Verdict Projectors

Whatever you need a projector for, you'll find the ideal product in this group. We were very impressed by the image quality of most of the projectors we tested, and many are excellent value.

Three office projectors stand out. Toshiba's TW90A has a wireless connection and produces a great picture, but it's expensive to buy and run. NEC's LT180 is cheap to buy and great for presentations, but it's the most expensive projector to run, costing 17p per hour. Dell's 3400MP has no such problems. It's tiny, relatively inexpensive to buy and run and produces a good picture. It wins our Best Buy award.

If you want a home cinema projector to enjoy the latest blockbuster in the comfort of your home, you're spoilt for choice. All four we tested produced a good picture, but the Panasonic and Epson projectors just edged ahead with the best image quality. Panasonic's PT-AE900E is the best of the bunch and, remarkably, it's also the cheapest. It wins a Best Buy award. **CS**

